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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/768,556	01/25/2001	Yukihiro Inoue	L8462.01101	5136

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EXAMINER

GEBREMARIAM, SAMUEL A

ART UNIT PAPER NUMBER

2811

DATE MAILED: 07/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/768,556

Applicant(s)

INOUE, YUKIHIRO

Examiner

Samuel A Gebremariam

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period of Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 April 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 5-8 and 11-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5-8 and 11-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 13 and 14 recite the limitation "said diffusion layer of the first conductivity type is formed so as not to be substantially present below said gate insulator film and is formed so as to be in contact (separated by a predetermined distance (claim 14)) with said protruding portions" in the claims. As indicated in figure 1B, the diffusion layer 7 is formed under the gate insulator layer, but it not clear where it contacts the protruding portion. Also layer 7 is clearly formed below the gate insulator film. Applicant is required to clarify the claimed invention in order to examine the case thoroughly.

### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 14 and 6 in so far in compliance of 35 U.S.C. 112 and as best understood by the examiner are rejected under 35 U.S.C. 102(b) as being anticipated by Pfister US patent No. 4,918,510.

Pfister teaches (fig. 3) a semiconductor device comprising: a source side offset diffusion layer region (44) and a drain side offset: diffusion layer region (42) of a second conductivity type in a transistor formed, so as to be separated from each other, in a

predetermined region in a region of a first conductivity type in a semiconductor substrate (36); a gate insulator film (48) region formed between the source side offset diffusion layer region (44) and the drain side offset diffusion layer region (42); a gate electrode (46) formed on the gate insulator film region, and a diffusion layer (40) of the first conductivity type of which the impurity concentration is higher than that of the region of the first conductivity type and which is formed so as to surround the source side offset diffusion layer region (44), the drain side offset diffusion layer region (42) and the gate insulator film region, wherein both ends of the gate insulator film region, in the channel width direction, form protruding portions (54) that, protrude at the borders of the source side offset diffusion layer region and of the drain side offset diffusion layer region in the direction toward the diffusion layer of the first conductivity type, and wherein the diffusion layer of the first conductivity type is formed so as to surround the protruding portions and so as to be separated from the protruding portions by a predetermined distance.

Regarding claim 6, Pfister teaches (fig. 3) the entire claimed structure of claim 14 above including the diffusion layer (40) of the first conductivity type is a channel stopper region.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 13 and 5, are rejected under 35 U.S.C. 103(a) as being unpatentable over Pfiester in view of Nagatomo et al. US Patent No. 5,164,806.

Regarding claim 13, Pfiester teaches substantially the entire claimed structure of claim 14 above including the diffusion layer of the first conductivity type is formed so as not to be substantially present below the gate insulator film region.

Pfiester does not teach the diffusion layer is formed so as to be in contact with the protruding portions.

Nagatomo teaches (fig. 4) forming region (15) between region (5a) and channel stop layer (8) for forming MOS transistor. The formation of region (15) increases the breakdown voltage of the junction.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the impurity region taught by Nagatomo in the structure of Pfiester in order to increase breakdown voltage. The modified structure of Pfiester would have the diffusion layer contacting the protruding portion.

Regarding claim 5, Pfiester teaches substantially (fig. 3) the entire claimed structure of claim 13 above including the diffusion layer (40) of the first conductivity type is a channel stopper region.

Claims 11, 12, 7 and 8 in so far in compliance of 35 U.S.C. 112 and as best understood by the examiner are rejected under 35 U.S.C. 103(a) as being unpatentable over Pfiester, Nagatomo in view of Murakami US patent No. 4,819,045.

Regarding claims 11 and 12, Pfiester teaches substantially (fig. 3) the entire claimed structure of claims 13 and 14 above including the source side offset diffusion

layer and the drain side offset diffusion layer are lower in impurity concentration than diffusion layer.

Pfiester fails to teach the transistor is a high voltage transistor.

The use of MOS transistors for high voltage application is conventional and also Murakami teaches the use MOS transistor for high voltage application.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the structure of Pfiester for high voltage application as taught by Murakami for improved withstand of high voltage application.

Regarding claims 7 and 8, Pfiester teaches substantially (fig. 3) the entire claimed structure of claims 13 and 14 above including the diffusion layer of the first conductivity type is a channel stopper region (40).

#### ***Response to Arguments***

4. Applicant's arguments with respect to claims 9-12 and 5-8 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel Admassu Gebremariam whose telephone number is 703 305 1913. The examiner can normally be reached on 8:00am-4: 30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on (703) 305-7646. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Samuel Admassu Gebremariam  
July 11, 2003

Steven Loh  
Principal Examiner  
*Steven Loh*